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## **Online Review Helpfulness: Role of Qualitative Factors**

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## **Online Review Helpfulness: Role of Qualitative Factors**

### **Abstract**

Consumers are increasingly reading online reviews before making any purchase decisions. Significance of online reviews has only grown over years. Though in the past scholars have emphasized the role of the quantitative factors such as review ratings in impacting online reviews, only recently, they have begun to explore the role of qualitative aspects of online reviews. Content readability and associated sentiments in text provide two such important qualitative cues which influences helpfulness of online review. However, the extant literature has over emphasized the linear association between these aspects and review helpfulness. Using the elaboration likelihood model and the classic ideal point concept, we assert that after an ideal point is attained, lucid and sentimental reviews diminish utility i.e. helpfulness of online review for consumers reduces. This may happen as consumers are wary of dubious reviews. We further propose that if such extreme reviews are given by experienced reviewers, then consumers might still draw utility from extremely lucid and sentimental reviews. In other words, we explain the moderating role of reviewer experience which heuristically influences consumers' trust on online reviews, thus making them helpful even for too simplistic and extremely sentimental reviews.

**Key words:** Online review helpfulness, review readability, review sentiment and reviewer experience

### **Highlights**

- Online review helpfulness shares a nonlinear relationship with qualitative attributes of online review content

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- Online review readability and sentiment follows curvilinear relationship with review helpfulness.
- Reviewer's past experience in writing reviews negatively moderates this relationship between review helpfulness and contents' readability and sentimental tone

## **Introduction**

Customer review is one of the most easily accessible and available information source for potential buyers, which they perceive to be superior compared to traditional marketing channels (Godes and Mayzlin 2004). More than two-third of consumers trust online reviews for making purchase decisions (Nielsen 2015). Extant literature largely relates the quantitative aspects of online reviews such as review volume or star ratings with firms' financial performance metrics such as sales growth or conversion rate (Chua and Banerjee 2016; Dellacras et. al, 2007; Henigh et. al, 2010).

Online reviews have the potential to influence consumers' attitude towards the brand and purchase intention (Fagerstrøm et al, 2016; Wu and Wu, 2016), and it is vital to explore consumers' response to reviews, which could be best gauged through review helpfulness (VanMeter et. al, 2015). Nevertheless, online reviews are more or less unstructured thus raising challenges for consumer to read and interpret the review (Cao et. al, 2011). Extant literature indicates that qualitative aspect of a review such as its readability and affective cues becomes vital in determining review helpfulness (Racherla et. al, 2012; Park and Park, 2013). Thus, sentimental cues such as 'I enjoyed my stay in hotel' or 'worst shoes ever purchased' can be quickly cognitively processed by consumers thus influencing their attitude towards product or service (He et. al, 2015). Similarly, easily comprehensible text is likely to put less cognitive load on consumers' information processing capabilities thus raising its likelihood as a useful or helpful review (Cao et. al, 2011).

Nevertheless, current research on review helpfulness provides limited guidance on how qualitative factors make online reviews useful for potential consumers and hence signal online retailers about consumers' potential purchasing behavior (Filieri, 2015; Kim et.al, 2015;

Mackiewicz and Yeats, 2014; Park and Nicolau, 2015 ). We thus intend fill this gap and hence theoretically explore and provide relevant managerial guidance for the impact of textual properties of review on their helpfulness for consumers. Hence, the major objective of this paper is to explore the role of two qualitative factors namely review readability and associated sentimental tone of online review on helpfulness of the review. Accordingly we contribute to literature in three ways.

Based on the elaboration likelihood model and the classical ideal point concept, we find that review helpfulness after certain point decreases, with increase in readability of review and its sentimental tone. This is in contrast to extant literature which indicates a positive and linear relationship between text attributes and review helpfulness. (Fang et. al, 2016). According to the elaboration likelihood model, consumers are likely to cognitively process the text and find it more useful, as its comprehensibility increases. However, based on the classical ideal point concept, we argue that the final perception about review helpfulness is shaped by the complex integration of cognitive information processing and the utility serving potential of the text verbatim i.e. text readability and associated sentimental tone. Once the ideal point is reached, utility drawn from the text comprehensibility of online review or sentimental tone of review decreases and hence helpfulness of review also deteriorates.

Second, in extant literature positive and negative sentimental cues have been examined separately for their effectiveness, Schindler and Bickart, 2012; Tang et. al, 2014). However, in the light of increasing fake online reviews, consumers have begun to realize that extremity in either positive or negative sentimental tone of the text could be dubious (Lijander et. al, 2015). Thus, instead of examining them separately, we explore the cumulative effect of both positive and negative sentimental tone on review helpfulness. Third the cognitive processing of text

analysis is highly contextual and could be influenced by reviewer characteristics (Pentina et. al, 2015). Thus, reviewer characteristics could influence consumers' perception about the review (Zhang et. al, 2014). We extend prior research in this regard by exploring the role of reviewers' past experience of writing reviews in moderating review helpfulness and texts' qualitative attributes relationship. By virtue of their credibility, experienced reviewers could extend the utility derived from lucid and extremely sentimental reviews (Bronner and Hoog, 2016). We thus, highlight the need of considering contextual and moderating impact of reviewer characteristics in evaluating text attributes and review helpfulness relationship in consumer review setting.

## **Theoretical Background**

### *Conceptual foundation*

Research on text based communication indicates that writing style of verbatim influences to a large extent how consumers perceive online reviews (Huffaker, Swaab, and Diermeier 2011). The elaboration likelihood model (Petty and Cacioppo, 2012; Petty and Cacioppo, 1986) suggests that consumers' could cognitively process information of the content and related attributes through central and heuristic processing. Extant literature indicates that information embedded in text is centrally processed by consumers whereas information associated with text attributes such as reviewer traits is heuristically processed by consumers (Cheung et. al, 2012; Park and Lee, 2009). The final impact of text verbatim and their related attributes on review helpfulness could be a result of the complex integration of information processing through central and heuristic cues. Text verbatim that we focus on in this study constitutes text

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readability and sentiments and attributes related to text that we examine in this study is reviewers' past experience of writing reviews. Sentiments such as anger or happiness reveals the emotions of reviewer associated with the product (Gopaldas, 2015). These sentiments have been found to influence consumers' cognitive brand evaluation (Lau-Gesk and Meyers-Levy 2009; Wu, 2013). Similarly, sentimental tone of text can influence consumers' evaluation of online review (Casaló et. al, 2015).

However, review helpfulness may not directly vary with qualitative factors such as readability and review sentiment (Fench, Flores and Bench, 2011). According to the classical ideal point concept, any attribute of product or service is of utmost utility to a consumer only at a moderate level (Teas, 1993). Thus, beyond a certain point, as attribute increases, it evokes negative response from consumers as their utility from the attribute starts to diminish (Lilien, 1994).

Applied to the context of text analysis, this implies that as readability or sentimental tone of the text increases, consumer utility in terms of assessment of helpfulness of review increases, but only up to a certain point, beyond they do not draw value from extremely lucid or emotional review. Utility may decline as in the light of increasing fake online reviews; consumers might discount too much information given in text verbatim in an extremely sentimental level.

Consumers respond to multichannel marketing programs positively up to an ideal point only, beyond which such communication programs are not appreciated by consumers (Godfrey et. al, 2011). In the online review context also this deterioration in utility might take place, especially in the light of increasing fake online reviews. Consumers, aware of the possibility of dubiousness in reviews, are likely to become suspicious about them, if the language in review is too lucid or if too much sentiments are disclosed, thus turning relationship between review text and its helpfulness negative beyond a certain point (Petty et. al, 2003; Strietfield, 2011).



*Readability of the Review*

Any product review has two components namely the quantitative aspect of the review such as review rating and the qualitative aspect such as review readability, which affect firm specific outcomes such as sales growth (Dellarocas, Xiaoquan, and Awad 2007; DeLange et. al, 2015), purchase intention (Jimenez and Mendoza, 2013) or review helpfulness (Schlosser, 2011). Until recently, scholars over emphasized the role of the quantitative parameters and only limited emphasis was given to the textual properties of online reviews (Korfiatis et. al, 2008). Review readability, which refers to the level of effort required to understand the text (Dubay, 2004) is one such kind of textual property. Helpfulness of the review, could be impacted by review readability, as a consumer has to first read and comprehend text to interpret its usefulness (Korfiatis et. al, 2008).

Consumers while evaluating product reviews, according to the elaboration likelihood model, are likely to cognitively evaluate the review (Lee et. al, 2008). Consumers would consider review as helpful, only if they have been cognitively able to comprehend the text appropriately.

Appreciation or criticism of the text does not matter for a consumer if he or she has not been able to understand the content appropriately. Hence, once text has been comprehended well, consumers become apt to form opinion about usefulness of the review. In other words, more the text is easy to process cognitively, better is its readability and hence better are the chances that consumers consider it readable (Korfiatis et. al, 2012). Furthermore, the relation between review helpfulness and ease of cognitive processing of review may not be a linear one. The classic ideal point concept (Teas, 1993, p.96) suggests that “as an attribute increases up to the ideal point, utility also increases and consumer responses become more favorable. After the ideal point is

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attained, further increases in the attribute instead result in negative utility and less favorable customer response.” Thus, if text of the review is too easy to comprehend for which consumers require minimal level of cognitive processing, then up to the ideal point the review will be helpful to consumers. Nevertheless, beyond the ideal point even easy to comprehend reviews may not be any more helpful for the consumer, as there will be a drop in utility. Utility may drop because of increasing instances of fake online reviews, which might turn consumers suspicious about the genuineness of the review if it is too easy to comprehend. To catch readers’ attention, deceptive reviewers might intentionally make review simple and lucid, which may then caution readers about fake review (Li et. al, 2013; Vasquez, 2014). In other words, as readability of the review increases, consumers draw more utility from review and user-friendliness of review increases. However, after a certain point, as text becomes too luculent to interpret, utility drops and user friendliness of review decreases. Hence we hypothesize:

*H1 Review readability follows curvilinear relationship with review helpfulness*

### *Impact of Sentiments in Review*

Consumers’ thought and behavior can be easily influenced by the sentiment of the text i.e. the extent to which emotions are expressed in review (Baumeister et. al, 2007; Lench et. al, 2011). A positive sentimental tone might convey pleasant information to consumer, whereas negative sentimental tone sends disappointing or unpleasant message to consumer (Krizan et. al, 2007; Floh et. al, 2013). Thus, sentimental tone of the review can influence the way information is processed (Berger and Milkman, 2012; Hu et. al, 2014). Extant literature indicates that consumers centrally process negative review differently from positive review, as a consequence

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of which opinion about helpfulness of review varies (Sparks and Browning, 2011). Generally consumers find negative reviews as more informative (Lee et. al, 2008; Yang and Mai, 2010). However, according to the ideal point concept, any extremity in sentiments be it positive or negative should provide only diminishing utility to consumers. Thus, beyond a certain point, utility drawn from sentimental review would decrease as consumers are likely to associate the polarity in review with fraud (Munzel, 2013; Yin et. al, 2014). Thus, too much emotionally expressive review would be cognitively processed as an attempt to manipulate consumers' purchase decision either by trying to limit their choice through negative review or push them for purchase through too much appreciation about the product. Hence, consumers may reciprocate negatively by finding the review as not helpful in either case (Wendlant and Schrader, 2007).

In finance studies it has been found that mood of the online text about firms' actions influenced investors' sentiments as reflected in the stock market price movement of the firm (Das et. al, 2005; Demers and Vega, 2008). Thus, the argument could be extended to review helpfulness study as well. Helpfulness of a vote does not imply that only negative reviews would be considered as helpful. Positive reviews can also be considered as helpful by consumers. Thus, as long as sentimental tone is neither extremely positive or extremely negative, consumers should find review as helpful, irrespective of it being a positive or a negative review (Hu et. al, 2012; Salehan and Kim, 2016; Schlosser, 2011). We thus hypothesize

*H2 Sentimental tone of the review follows curvilinear relationship with review helpfulness.*

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### *Moderating role of Reviewer exposure to media*

Social psychology literature suggests that message source characteristics influences attitude and behavior of people (Godes and Myzalin, 2004). Thus, extending this finding to marketing literature, scholars found that source characteristics influenced consumers' attitude towards products (Chu and Kim, 2011; Moore, 2015), their purchase propensity (De Langhe et. al, 2015) and hence product sales (Ludwig et. al, 2013). Several reviewer characteristics can influence user friendliness of the review. Baek et. al, 2012; Forman et. al, 2008).

One such parameter is exposure of the reviewer to the online review community i.e. reviewers' experience in posting reviews. Consumer may trust those reviewers more who have given reviews in the past compared to reviewers who are new to online community (Zhu and Zhang, 2010). Thus be it positive or negative review, consumers might consider them as more credible, compared to those posted by naive reviewer. Finance literature indicates that financial analysts improve in their recommendation accuracy as their experience with the firm increases, thus driving investor sentiments (Mikhail et. al, 1997; Ramnath et. al, 2008). Similarly, as a reviewer is more engaged in online communities, then by virtue of his experience he would garner trust of consumers (Ku et. al, 2012).

According to the elaboration likelihood model, though consumers might use central processing to comprehend the message text, as per extant literature they are more likely to use heuristic cues to judge the traits of reviewer such as her credibility, or likeability and media exposure in determining overall helpfulness of the review (Cheung et. al, 2012; Metzger et. al, 2010; Sussman & Siegal, 2003). This is because consumers have bounded rationalities (Simon, 1987), and thus cannot process all the voluminous information. Hence they are more likely to process

non content related aspects of review such as reviewer characteristics using heuristic cues (Park and Nicolau, 2015), which may then influence, consumers' central processing of information related to text given in online review (Petty and Cacioppo, 2012). One such heuristic cue is provided by the past exposure of online reviewer to media i.e. number of reviews posted by him in the past. This is because past experience of writing review makes him more trustworthy (Ludwig, 2013; Zhu et. al, 2014).

Under such circumstances, even if the message is too simplistic, consumers might discount a review and not consider it to be fake, as it has been written by an experienced reviewer. Thus, even though cognitive processing of review may not encourage the review to be helpful, the heuristics processing of information about experienced reviewer, lessen the impact that perception of fake review could have on review helpfulness. Similarly, if an experienced reviewer writes extremely sentimental review, consumers might still draw some utility from it and hence consider the review as helpful. Again consumers might discount for fakeness of extremely sentimental review, as heuristically they may think experienced reviewers are less likely to give fake reviews, and sentiments reflected are true reflection of their emotion.

Hence we hypothesize:

*H3 (a) Reviewer's past online review experience moderates review readability and review helpfulness relationship, such that when reviewer experience is high, consumers find extremely lucid reviews as more helpful, compared to when reviewer experience is low.*

*H 3 (b) Reviewer's past online review experience moderates review sentimental tone and review helpfulness relationship, such that when reviewer experience is high, consumers find extremely sentimental reviews as more helpful, compared to when reviewer experience is low.*

## **Methods**

We collected data from amazon.co.uk for a period of 1 month from 1<sup>st</sup> November, 2015 to 30<sup>th</sup> November, 2015. Amazon dataset has been successfully used in previous studies as well (Mudambi and Schuff, 2010; Willemsen et. al, 2011). Next we chose four product categories representing both experience and search products. This we did to control for product categories, as extant literature indicates that product type can influence online reviews (Bae and Lee, 2011). We took care of not including brands which were on special offers so as to control for price effect (Pavlou and Dimoka, 2006). Search products we considered were Samsung Galaxy 8 Tab and HP envy 4520 Printer. For experience products we considered Betron BT 1010, wireless head phone, and Nikon D 3200 camera. Similar product categories were considered by Bhattacharjee et al. 2006 and Huang et. al 2006. This amounted to a total of 1700 reviews. Some of the reviews received no helpfulness votes. Such reviews were removed from the data set. The final sample consisted of 1608 reviews.

### *Dependent Variable*

*Review Helpfulness:* In the study the dependent variable was review helpfulness, measured as percentage of people who found review as helpful. This was calculated as a ratio of responses that were voted as “yes” for helpfulness to total number of votes given by different consumers. Since, our dependent variable was censored as response was limited to extreme values of 0 to 1, we used Tobit regression to analyze our model (Mudambi and Schuff, 2010).

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### *Independent Variables*

*Review Readability:* We assessed readability of the review by using Flesch Reading Ease Index (Graesser et al. 2004). In this test, higher score indicates ease of readability i.e. higher the score, easier it is to read to the text. It is calculated using the formula

#### **Flesch Reading Ease**

$$= 206.835 - 1.015 \left( \frac{\text{total words}}{\text{total sentences}} \right) - 84.600 \left( \frac{\text{total syllables}}{\text{total words}} \right)$$

This index has been successfully used in the extant literature (Ghose and Ipeiritis, 2011; Korfiatis et. al, 2012; Graesser et al. 2004;). Furthermore, to reduce variability in data, natural log of resultant values were taken.

*Review Readability Squared:* To test the curvilinear impact of review readability, scores of readability were mean centered so as to reduce the chances of multicollinearity and then multiplied with review readability scores (Aiken et. al, 1991)

*Review Sentiments:* The online review texts were analyzed for positive and negative sentiments, using the linguistic inquiry and word count (LIWC) program. This program has been developed to analyze the emotional content of writing. LIWC has been proven for its highly reliable convergent validity of emotions as coded by software and that coded by human coders (Pennebaker et al. 2007). Furthermore, its validity has been established in more than 100 studies dealing with analysis of emotions in online content such as blogs or instant messaging (Cohn, Mehl, and Pennebaker 2004; Slatcher and Pennebaker 2006). LIWC gives separate score for

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positive and negative sentiments. These scores were added and again natural logarithm was taken to reduce variability.

*Review Sentiment Squared:* To test curvilinear impact of sentiments, sentiment score were mean centered and multiplied with original score

*Reviewer Experience:* This was captured as total number of reviews given by a particular reviewer in the past. Information on this was obtained from Amazon by clicking on Reviewer details. Total number of other reviews given by same reviewer before the focal review was counted and then natural log was taken so as to reduce variability in data.

*Interaction effect of Review Readability and Reviewer Experience:* Respective variables were mean centered by taking average of review readability scores and reviewer experience scores and further subtracting them from respective individual values of review readability and reviewer experience. Mean scores so obtained for review readability and reviewer experience was multiplied with each other. Mean centering was done so as to reduce chances of multicollinearity (Osborne, 2004).

*Interaction effect of Review Readability square and Reviewer Experience:* To calculate the interaction effect, the mean centered scores of squared Review Readability was multiplied with mean centered score of Reviewer Experience, the reason of choosing mean centered variables as to reduce chances of multicollinearity.

*Interaction effect of Review Sentiment and Reviewer Experience:* To calculate the interaction effect of review sentiment and reviewer experience, the mean scores for review sentiment and reviewers experience were obtained and multiplied.



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*Interaction effect of Review Sentiment square and Reviewer Experience:* The interaction effect of review sentiment square and review experience was obtained by multiplying the mean centered scores of squared review sentiment and review experience.

### *Control variables*

In this study we controlled for text related and source related variables, whose effect on helpfulness of review has been established in the past literature. We thus controlled for the rating of the review (Baek et. al, 2012); reviewer identity (Forman and Ghose, 2008); and nature of the product i.e. search or experience product (Mudabi and Schuff, 2010; Weathers et. al, 2015).

Rating of the review was captured as, number of star ratings given to a particular review.

Reviewer identity was captured as dummy variable with code of 1 if name of reviewer was given along with review. If only “Amazon customer” was mentioned along with review, it was coded as zero. Similarly, nature of product was also captured as dummy variable with search product coded as zero and experience product coded as one.

## **Results**

Table 1 presents the descriptive statistics and Table 2 outlines the results of the Tobit regression. Tobit regressions were run in five stages total. In the first stage, as reflected in Model 1 of Table 2, only control variables were introduced. In the second stage, as reflected in Model 2 of Table 2, the three independent variables (i.e., review readability, review sentiment, and reviewer experience) were introduced. In the third stage, as reflected in Model 3 of Table 2, the interaction effect of review readability and reviewer experience, as well as review sentimental tone and reviewer experience, were introduced. In the fourth stage, as reflected in Model 4 of

Table 2, the squared terms of review readability and review sentimental tone were introduced, as H1 and H2 can be tested only if both linear and squared terms of the two main variables are included. In the fifth stage, as reflected in Model 5 of Table 2, the interaction term of the squared main variables and reviewer experience was captured to test H3(a) and H3(b).

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**Insert Table 1 about here**  
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**Insert Table 2 about here**  
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The first hypothesis of the present study stated that review readability follows a curvilinear relationship with review helpfulness. According to Model 2 of Table 2, a significant and positive impact of review readability on review helpfulness ( $\beta_{\text{Review Readability}} = 0.17, p < 0.000$ ) was observed, whereas in Model 4, extremely luculent reviews exhibited a quadratic, tapering off impact on review helpfulness ( $\beta_{\text{Review Readability}^2} = -0.15, p < 0.05$ ), supporting a nonlinear relationship between review readability and review helpfulness. Thus, evidence in support of H1 was found. Consumers, after a certain point, draw diminishing utility from easily comprehensible reviews.

According to the second hypothesis, there exists a nonlinear relation between the sentimental tone of a review and its helpfulness. Again, as can be seen from Model 2 of Table 2, the sentimental tone of a review exhibits a significant and positive impact on review helpfulness ( $\beta_{\text{Review Sentiment}} = 0.12, p < 0.000$ ), whereas in Model 4, in cases of extreme sentimental tone, its impact on review helpfulness goes down ( $\beta_{\text{Review sentiment}^2} = -0.17, p < 0.05$ ). Thus, evidence in support of the second hypothesis was also found.

Lastly, the third hypothesis of the current study predicted a moderating influence of reviewer experience on the relationship between text content attributes and review helpfulness. Model 5 of Table 2 indicates that the beta coefficient of the interaction term of reviewer past experience and the review readability square term is significant and negative ( $\beta_{\text{Review Readability}^2 \times \text{Reviewer Experience}} = -0.07, p < 0.05$ ). This indicates that when reviewers' past experience is greater, consumers are less likely to discount extremely lucid reviews as fake, increasing perceived review helpfulness. This is clearly depicted in Figure 1, which shows that the curvilinear relationship between review helpfulness and review readability is steeper when the value of the moderator (i.e., reviewer experience) is higher. When a more experienced reviewer writes a review, a higher percentage of consumers find the review helpful, even if it is too simplistic or easy to comprehend. Thus, evidence in support of H3(a) was found.

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Insert Figure 1 about here

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Similarly, H3(b) predicted that the reviewer's past experience would moderate the relationship between review sentiment and review helpfulness. Again, the beta coefficient is significant and negative ( $\beta_{\text{Review Sentiment}^2 \times \text{Reviewer Experience}} = 0.09, p < 0.05$ ); Figure 2 details this relationship. As can be seen from Figure 2, when the moderator (i.e., reviewer) experience has a high value, then the proportion of consumers finding the review helpful is high for a particular level of review sentiment, compared to when reviewer experience is low. Thus, evidence in support of the second subset of the third hypothesis was also received. Furthermore, as can be seen from Model 3 of Table 2, the interaction effect of review readability and reviewer experience is significant and positive, similar to the interaction effect of review sentiment and reviewer experience. This indicates that more experienced reviewers enhance the linear impact of review readability or review sentiment on review helpfulness. Since review helpfulness is a complex integration of central and heuristic processing of information, the linear relationship is expected; however, once the ideal point is reached, the linear positive impact takes a downturn. This makes it vital to test the moderating influence of reviewer experience on the curvilinear relationship, rather than the linear relationship, between review text attributes and review helpfulness.

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Insert Figure 2 about here

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## **Conclusion and Discussion**

Extant literature has largely focused on the impact of online reviews on either consumer purchase intention or sales growth for the product (Fang et. al, 2013; Feng et. al, 2010; Wang et. al, 2015; Zhu and Zhang, 2010). However, yet another important aspect be explored is whether consumers find the reviews helpful or not. This is because review helpfulness acts as an aid to purchase decision (Korfiatis et. al, 2012).

Unfortunately, this aspect of online review has been explored to a lesser extent. We contribute to the online review helpfulness literature by exploring factors that enhances or reduces helpfulness of the review. Extant literature has emphasized the role of quantitative factors such as review rating and its volume in determining their impact on sales or purchase intention (Engler et. al, 2015; Moon et. al, 2014). However, quantitative factors have been criticized for lack of involvement of qualitative aspects such as readability or sentiments of the review text (Mudambi and Schuff, 2010; Van der Heijden, 2003). This study thus contributes to the contemporary research on helpfulness of review by outlining significant role of writing style specifically in terms of readability of the review and sentimental tone properties of the review text. The study further demonstrates dynamic influence of reviewer characteristics on helpfulness of review. We thus extend extant literature of review helpfulness in three ways:

First, most research on sentiments as a driver of consumer behavior such as response to review helpfulness assumes and explores linear relationships, (Cui et. al, 2012). Based on classic ideal point model, our results extend this line of research by positing and further demonstrating curvilinear relationship between sentimental tone of the review and helpfulness of the review. Furthermore, by considering both positive and negative sentiments together, we explore the

impact of extreme sentiments reflected in review, which has both theoretical as well as managerial relevance.

With the increase in incidences of fake online reviews, consumers have become wary about validity of reviews (Mudambi and Schuff 2010; Lijander et. al, 2015). Our study confirms consumers cognitively process sentimental review positively in terms of review helpfulness, but only to a certain extent. Beyond a certain point, utility of such reviews decreases for consumers. This may happen because of raised suspicion regarding genuinity of review beyond certain point. Thus, writing too much positive or too much negative about a product or service is detrimental for review helpfulness. This finding thus extend extant literature where negative reviews are found more influential in driving consumer behavior rather than positive reviews or vice versa (Cui et. al, 2012; Ludwig et. al, 2013).

Second, the elaboration likelihood model elicit that consumers use central cognitive processing to comprehend and analyze the text. We add to this theory by validating the model in the context of online review content. Again though previous studies explain a linear relationship between cognitive processing and comprehension ability of review, we based on ideal point model stretch the ELM to explain a curvilinear relationship between readability of the review and helpfulness of the review. We, , thus show for the first time that in an anonymous online review setting, readability of the review establishes consumers' perceptions about review usefulness in a nonlinear fashion.

Third, we extend the role of standalone influences of review readability and affective cues by considering the joint impact of review content and reviewer characteristics (Chevalier and Mayzlin, 2006). Extracting useful information from the electronic word of mouth where

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consumers are not facing each other, and where reviews are voluminous, could be quite challenging for consumers. Thus, under such circumstances they process information based on joint impact of review content and reviewer characteristics, using both cognitive and heuristic processing. Past exposure of reviewer to online media thus moderates the influence of readability and sentimental tone of the review on its helpfulness. As per ideal point theory, after a certain point, utility of review readability and sentimental content decreases for consumers, as cognitively they may perceive such extreme contents as dubious. However, when an experienced reviewer provides such extreme reviews, consumers may heuristically process the information about reviewer and believe on the review comparatively more due to its credibility, even if it is extreme in nature and hence find it helpful (Lopez and Sicilia, 2014).

### *Managerial implications*

Online reviews have accelerated and enhanced firms' reach to consumers. Any positive comment about firms' product and service can bring positive attitudinal changes in consumers' perception about firms' product and negative feedback can reverse the same. But with increasing number of reviews, it could be difficult to gauge cumulative effect of such reviews. When too many reviews are available to consumers, they prefer to read reviews which are easily comprehensible. We in this paper illustrate how text analysis both in terms of review readability and affective cues can be used to analyze helpfulness of review. Given such review helpfulness can shape consumers' purchase intention, it is vital for marketing managers to understand significance of text analysis.

Text analytics especially, review content characteristics can enable marketers to quantify the unstructured data. Thus, attributes of review content can help retailers and manufacturers to

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develop marketing intelligence from online product reviews (Gensler et. al, 2015). This implies that after collecting and monitoring customer review, marketers can understand reviews which are too lucid or too sentimental would not be considered helpful or genuine by consumers and thus can eliminate such potentially suspicious reviews from the system (Larson and Denton, 2014). Thus to improve review helpfulness, marketers should encourage reviewers to reflect their emotion in most vivid manner and further write the review in reasonably comprehensibly manner. In this regard it would be even more fruitful to establish some review writing guidelines. Or marketers can present some demo reviews both positive and negative in nature, which have been written in the past and consumers have found as useful. This can also be reflected in Editorial comments or such similar sections on web site. To appropriately present ones' emotional state, regarding the product or service, marketers should also suggest usage of appropriate function words which could help in appropriate interpretation of content and its affiliated sentiments. These sections should be especially targeted towards naïve reviewers as due to lack of review exposure, they are likely to be judged more carefully for the review content and its sentimental tone by readers. Furthermore, marketers should incentivize repeat reviewers, as consumers are more likely to rely on them and be less suspicious about extreme generosity in writing or reflecting extreme sentiments in review (Shen et. al, 2015). Broadly, text analysis of review content opens an agglomeration of insights for marketing managers which should be judiciously used by them to enhance review helpfulness as it is crucial step in forming consumers' attitude and purchase intention (Mauri and Minnazi, 2013).

Yet another way of enhancing review helpfulness could be to shuffle the order of review which appears on web. Thus, reviews given by most experienced reviewers (be it positive or negative)



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should be posted first rather than placing most recent review first. This way the potential damage caused by extreme reviews in terms of readability and sentimental tone can be diminished to some extent, as consumers are more likely to heuristically believe experienced reviewers even if their writing is extreme.

Third party reviewers such as Amazon or tripadvisor.com, sometimes sell reviews to producers and publishers and service providers, so that reviews concerning their products and services could be posted on their respective sites. These producers, and manufacturers also need to learn about dynamics of online reviews as it can help them in picking reviews which are at least perceived to be genuine and hence helpful. Again they need to be wary about using both positive and negative reviews as posting only positive reviews can send negative messages to potential consumers.

Overall firms can develop long lasting relationships with consumers once they understand the linguistic and sentimental dynamics of consumers which drives their attitude towards online review and potentially attitude towards brand or product (Ullah et. al, 2016). A clue on how consumers effectively converse with each other through texts' readability and affective cues, can help firms to calibrate their dialogue with consumers either by presenting most appropriately perceived reviews at the top or launching conversational programs with consumers. Finally, the study emphasizes that review content and associated sentiments of consumers reflected on social media and associated platforms makes them a vital predictor of review helpfulness. Any extremity with easiness of comprehensibility of the review or its sentimental content, especially those given by naïve reviewers can make consumers perceive those reviews as non-friendly,

### *Online Review Helpfulness*

even if review is genuine. Marketers should work with such naïve reviewers and guide them about appropriate linguistic skills and at the same time encourage repeat reviewers to continue giving reviews to enhance authenticity and reliability of the review.

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**Table 1 Descriptive Statistics**

	1	2	3	4	5	6	7
Review Helpfulness	1						
Review Rating	0.15***	1					
Reviewer Identity	0.09***	0.06*	1				
Product Type	0.12***	0.05*	0.07**	1			
Review Readability	0.19***	0.10***	0.10***	0.04	1		
Review Sentiment	0.13***	0.09***	0.08**	0.12***	0.10***	1	
Reviewer Experience	0.15***	0.008	0.009	0.05*	0.09***	0.11***	1
Mean	0.74	4.01	0.77	0.59	11.2	0.65	3.21
S.D	0.38	1.62	0.31	0.22	5.97	0.29	1.18

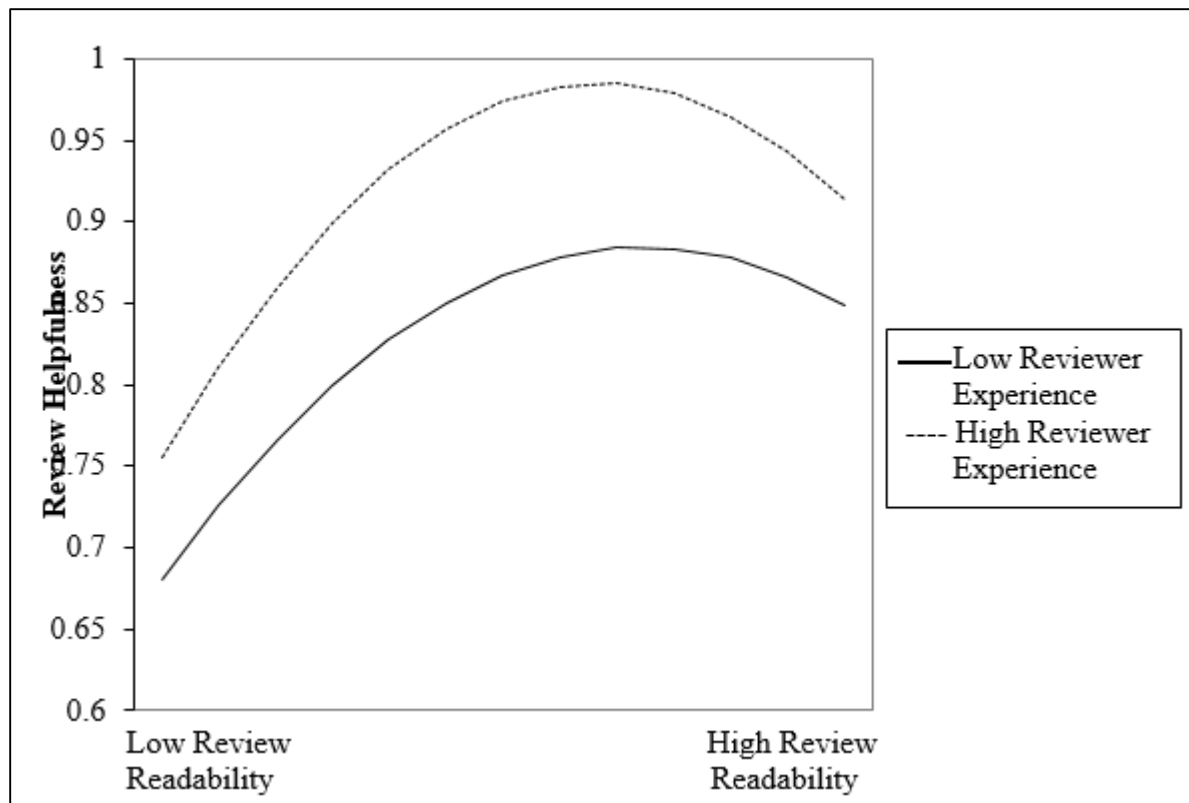
\*\*\*,  $p < 0.000$ ; \*\*,  $p < 0.01$ ; \*,  $p < 0.05$

**Table 2: Results of Tobit Regression**

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	0.38*** (0.03)	0.39*** (0.03)	0.39*** (0.04)	0.41*** (0.03)	0.40*** (0.01)
Review Rating	0.12** (0.04)	0.13*** (0.03)	0.13** (0.05)	0.12*** (0.01)	0.11*** (0.02)
Reviewer Identity	0.08 (0.05)	0.07 (0.05)	0.08 (0.05)	0.09 (0.04)	0.11 (0.07)
Product Type	0.18 (0.12)	0.19 (0.13)	0.19 (0.12)	0.17 (0.11)	0.12 (0.09)
Review Readability		0.17*** (0.05)	0.18** (0.06)	0.18* (0.07)	0.19*** (0.05)
Review Sentiment		0.12*** (0.02)	0.12*** (0.03)	0.13*** (0.03)	0.14** (0.05)
Reviewer Experience		0.16** (0.05)	0.17** (0.06)	0.17*** (0.05)	0.17** (0.06)
Review Readability x Reviewer Experience			0.11*** (0.02)	0.12*** (0.03)	0.13** (0.04)
Review Sentiment x Reviewer Experience			0.10*** (0.03)	0.10*** (0.03)	0.12*** (0.02)
Review Readability <sup>2</sup>				-0.15** (0.05)	0.16** (0.06)
Review Sentiment <sup>2</sup>				-0.17** (0.06)	0.18* (0.07)
Review Readability <sup>2</sup> x Reviewer Experience					-0.07* (0.03)
Review Sentiment <sup>2</sup> x Reviewer Experience					-0.09* (0.04)
Pseudo R <sup>2</sup>	0.13***	0.15***	0.16***	0.18***	0.21***

\*\*\*, p<0.000; \*\*, p<0.01; \*, p<0.05; s.e. in parentheses

**Figure 1: Moderating role of Reviewer Experience on Review Helpfulness and Review Readability relationship**





**Figure 2: Moderating role of Reviewer Experience on Review Helpfulness and Review Sentiment relationship**

